



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,834	02/27/2004	Matthijs H. Keuper	LUM-04-01-04 US	8255

32566 7590 02/24/2006

PATENT LAW GROUP LLP  
2635 NORTH FIRST STREET  
SUITE 223  
SAN JOSE, CA 95134

EXAMINER
----------

HARRINGTON, ALICIA M

ART UNIT	PAPER NUMBER
----------	--------------

2873

DATE MAILED: 02/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/789,834

Applicant(s)

KEUPER ET AL.

Examiner

Alicia M. Harrington

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 14-30 is/are rejected.
- 7) ☒ Claim(s) 11-13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

***Specification***

2. The Examiner's objection to the specification is withdrawn.

***Information Disclosure Statement***

3. The Examiner has reconsidered the information disclosure statement filed on 12/8/05. The non-patent literature has now been considered.

***Drawings***

4. The Examiners objection to the drawings is withdrawn.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1,2,4-9,14,15,19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Song et al (US 6,552,754) in view of Roddy et al (US 6,648,475).

Regarding claims 1,14,and 18, Song discloses an apparatus comprising:

a first laser diode, a second laser diode and a third laser diode, (see col. 2, lines 17-24 and 39-50; col. 6, lines 40-60; 21, 22, 23-see figure 8 or 9),

a first reflecting surface (24 or 41) positioned to reflect light emitted from the first laser diode;

a second reflecting surface (25 or 42) positioned to reflect light emitted from the second laser diode;

a first filter (a cross layer of the prism between the two reflecting surfaces) disposed between the first reflecting surface and the second reflecting surface and configured to reflect the light reflected from the first reflecting surface and to transmit light reflected from the second reflecting surface and the light emitted by the third laser diode; and  
a second filter (a cross layer of the prism between the reflecting surface) disposed between the first reflecting surface and the second reflecting surface and configured to reflect the light reflected from the second reflecting surface and to transmit light reflected from the first reflecting surface and the light emitted by the third laser diode (see col. 6- col. 7, lines 1-27; #30);

wherein the first filter and second filter combine the light reflected from the first reflecting surface, the light reflected from the second reflecting surface and the light emitted from the third light emitting diode (see figures 8 or 9). However, Song fails to disclose an embodiment where light emitting diodes are implemented in the projection system to provide the primary color wavelengths. Although, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute LED light source for the laser diode, since prior art (Roddy et al) teaches a diode projection system can

implement primary color light using lasers or LED's (see col. 11, lines 30-40) because they both offer a spectrally pure light source and it would be a functional equivalent. An LED light source is a cheap, compact and lower power source.

Regarding claims 2, Song illustrates the light coming from the diode array (red, green and blue) is collimated (parallel beams) via the output from the valve (collimating system). Song fails to specifically disclose a collimator. Roddy teaches an uniforming optic (14) which is the functional equivalent to collimator. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide collimators for each light source, to help increase the light input of the projection.

Regarding claims 4 and 19, Song discloses the apparatus of Claim 1, wherein the first filter and second filter are dichroic filters positioned orthogonally relative to one another (see figures 8 or 9-dichroic prism).

Regarding claims 5 and 20, Song discloses the apparatus of claim 4, wherein a x prism with dichroic filters are used to selective transmit and reflect light and the structure of the x-cube is equivalent to a first filter has a front surface and a back surface, and wherein the second filter comprises two halves, a first half having an end that abuts the front surface of the first filter and the second half having an end that abuts the back surface of the first filter. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include this filter structure in the dichroic x prism, since it is known in the art and provides adequate reflection and transmission properties for light sources directed/aligned to emit light towards the prism.

Regarding claims 6 and 21, Song discloses the apparatus of Claim 1, wherein the first filter and second filter are formed from an X-cube prism (see figures 8 or 9).

Regarding claims 7 and 15, Song discloses the apparatus of Claim 1, the apparatus further comprising a lens configured to receive the combined light from the first filter and the second filter (#40).

Regarding claims 8 and 22, Song and Roddy disclose the apparatus of Claim 1, wherein the first light emitting diode, second light emitting diode and third light emitting diode each emit light of a different color, the colors being red, green and blue (see col. 5, lines 45-50 of Song; and see col. 10 of Roddy).

Regarding claim 9, Song discloses the apparatus of Claim 1, wherein the first laser emitting diode, second laser emitting diode and third laser emitting diode lie within the same plane (see figures 8 or 9). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Song, to place LED's in the same plane, since Song teaches placing the light sources in the same plane and the LED's are a functional equivalent light source.

7. Claims 3, 10, 16, 17 23-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Song (US 6,552,754) in view of Roddy et al (US 6,648,475), further in view of Morgan (US 2005/0128441).

Regarding claims 3, 10, 16, and 30 Song and Roddy discloses a laser/LED video projector, which inherently has a frame for the parts of the projector. However, they fail to specifically disclose the LED array is mounted on a heat sink in the frame.

Morgan discloses an LED projection system where an embodiment of the invention incorporates the LED mounted on a heat sink (see sections 58 and 101). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to mount an LED array to a heat sink, since it is known in the projection art, helps to make the projection system more compact and provide a way decrease the heat in the overall projection system.

Regarding claim 17, Song illustrates the light coming from the diode array (red, green and blue) is collimated (parallel beams) via the output from the valve (collimating system). Song fails to specifically disclose collimators. Roddy teaches a uniforming optic (14) which is the functional equivalent to collimator. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide collimators for each light source, to help increase the light input of the projection. The frame is inherent.

Regarding claims 23 and 24, Song discloses a laser video projection system comprising:

- Frame (inherent)

- Song illustrates the light coming from the diode array (red, green and blue) is collimated (parallel beams) via the output from the valve.)

- Mounting a first mirror and second mirror (41a, 42a);

- Mounting a filter system (combiner 30)

- Mounting at least three laser diodes- red, green, and blue- to the frame wherein each is associated with a collimator in the collimating system. Song fails to specifically

disclose a collimator system. Roddy teaches a uniforming optic (14) which is the functional equivalent to collimator. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide collimators for each light source, to help increase the light input of the projection. However, Song and Roddy fail to specifically disclose the LED array are mounted on a heat sink in the frame.

Morgan discloses an LED projection system where an embodiment of the invention incorporates the LED mounted on a heat sink (see sections 58 and 101). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to mount an LED array to a heat sink, since it is known in the projection art and it helps to make the projection system more compact.

Regarding claims 25 and 26, Song discloses an x-cube with dichroic filters that are oriented orthogonally. The dichroic filters are used to selective transmit and reflect light and the structure of the x-cube is equivalent to mounting second dichroic filter to the frame, the second dichroic filter having a first portion mounted on a first side of the first dichroic filter and a second portion mounted on a second side of the first dichroic filter, Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include this filter structure in the dichroic x prism, since it is known in the art and provides adequate reflection and transmission properties for light sources directed/aligned to emit light towards the prism.

Regarding claim 27, Song discloses element 40.

Regarding claim 28, Song fails to specifically disclose an embodiment using lens integrally formed with the laser system. Roddy teaches a uniforming optic (14) which is



the functional equivalent to collimator. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide collimators for each light source, to help increase the light input of the projection. It would have been further obvious to one of ordinary skill in the art at the time the invention was made to include a lenses, since they would operate as the functional optical equivalent and are easily interchangeable if they malfunction.

Regarding claim 29, Song discloses red, green and blue lasers (21-23). Roddy teaches the plurality of lasers/LED diodes provide these colors also (see col. 10 of Roddy).

***Allowable Subject Matter***

8. Claims 11-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 11, prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the dependent claims, in such manner that a rejection under 35 U.S.C 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed limitations which includes an apparatus further comprising, a fourth light emitting diode, third reflecting surface, fourth reflecting surface positioned to reflect light from the fifth light emitting diode, wherein the first filter is further configured to reflect light from the third reflecting surface and to transmit light reflected from the fourth reflecting surface, and the second filter is further configured to

reflect light from the fourth reflective surface and to transmit light reflected from the third reflective surface as claimed.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M. Harrington whose telephone number is 571 272 2330. The examiner can normally be reached on Monday - Thursday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571 272 2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



AMH

Alicia M Harrington  
Primary Examiner  
Art Unit 2873